

REMARKS

Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1 and 2 are currently being prosecuted. The Examiner is respectfully requested to reconsider her rejections in view of the amendments and remarks as set forth below.

Rejections Under 35 U.S.C. §102

Claims 1 and 2 stand rejected under 35 U.S.C. §102 as being anticipated by Tung et al. (U.S. Patent No. 6,543,676). Claims 1 and 2 also stand rejected under 35 U.S.C. §102 as being anticipated by Chan et al. (U.S. Patent No. 6,592,943). These rejections are respectfully traversed.

In regard to both rejections, the Examiner states that the reference teaches a screen printing apparatus with a plurality of through holes for printing solder. Applicants submit that the claims are not anticipated by either of these references. Furthermore, Applicants submit that the Examiner has misunderstood the present invention.

In the present device, a fixture 10 (see FIG. 2) for printing characters on a printed circuit board is utilized to also print insulating portions in the gaps between adjacent pins. This is done in the same step and at the same time that indication markers are placed on the board. As is shown in the prior art device of FIGs. 1a and 1b, fixture 110 includes a through hole 111 to allow an indication marker to pass there through and be printed on the circuit board. In the present device, this is now expanded so that not only is the indication marker printed on the circuit board, but also insulating portions 22a, 22b (see FIG. 4) are also provided at the same time. After this is completed, the step of the solder bump fabrication proceeds, as in the prior art. Thus, the present invention provides additional isolation portions between the pins in the same step used to mark the circuit boards and before the solder bumps are formed.

In regard to each of the rejections, the Examiner suggests that each reference teaches a screen printing apparatus which has a plurality of through holes for printing solder. This is

clearly different from the present invention which utilizes the through holes to print isolation portions, not solder portions. The solder bumps are instead formed in the second step. Thus, Applicant submits that the Examiner has misunderstood the present invention and applied references which have no relationship to the process of printing isolation portions between the pins. The isolation portions are used to separate adjacent pins from any potential extra solder bumps. This prevents adjacent pins from being short circuited.

The Tung et al. reference shows a pin attachment method for mounting the pins on a wiring substrate in the fabrication of a pin grid array package. When the pin 11 is soldered to the pad 4, the strength of the joint can be increased because of the sidewall 13 of the pad. The side wall can increase the contact area between the solder and the pin in order to increase the adhesion strength. This method results in an improved strength and reliability of the solder joint in a PGA package used to electrically interconnect with a socket or adapter. However, this reference does not disclose the printing of isolated portions which can separate two pins from being bonded together by a solder bump and thus prevent devices from short circuiting.

Likewise, Chan et al. shows a method for depositing solder. The bonding sheet 31 and the release leader 32 have an aperture extending there through. A conductive composition is deposited into the aperture. A squeegee 42 guides the conductive composition into the aperture in the bonding sheet. The composition is then disposed in the aperture so as to contact the conducting regions under the aperture. Thus, the composition can reduce the probability of bubbles forming when developing a multi-layer lamination process. Thus, Chan et al. shows a method that uses conductive compositions which form metallurgical bonds to metal terminals and do not generate significant amounts of gaseous byproducts. The reference does not disclose isolated portions which separate two pins from being bonded by a solder bump to cause short circuits.

In view of the above, Applicant submits that the present claims are not anticipated by either of these references. Claim 1 recites an apparatus for printing characters on a printed circuit board where the apparatus has through holes corresponding to gaps in the pins so that

isolated portions are formed between the pins while the characters are printed on the board. The references do not show through holes which correspond to gaps between the pins and do not show the formation of isolated portions between the pins at the same time the characters are printed on the board. Accordingly, claim 1 is not anticipated by either of these references.

Claim 2 teaches similar limitations for a screen printing fixture for printing characters on a board. The references do not show such a fixture for printing characters and also does not show through holes corresponding to gaps in the formation of isolated portions between the pins. Accordingly, claim 2 is likewise allowable over these two references.

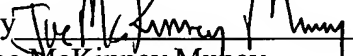
Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner. In view of this, reconsideration of the rejections and allowance of all the claims is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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